UPS/400
Installation and Administration Guide

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UPS/400 . . . an IBM AS/400 UPS power monitoring system . . .

INTRODUCTION

UPS/400 is power monitoring software that continuously monitors your UPS hardware, 24 hours a day, 7 days a week, for alerts indicating an AS/400 system power fluctuation or loss. Upon detecting a notification, **UPS/400** sends messages to users advising them of pending power outage. If power is not returned, **UPS/400** notifies users to sign off the system, takes control of your system, and begins an orderly shutdown. If at any time during the shutdown period power is restored, **UPS/400** resets the system to normal and informs all users.

User-friendly menus and pop-up windows provide an easy, non-technical approach to installation and customization. **UPS/400** is delivered with a sample shutdown plan already in place, so you can activate the product with or without further tailoring.

UPS/400 includes a simulated UPS power failure test function that utilizes the shutdown criteria shown on the System Attributes display. The test function permits you to test your system attributes (whether defaulted or customized) in simulation mode. **UPS/400** executes the specified parameters for each step, and sends messages to the system operator and active users at each of the six time intervals that you specify. In this way, you can test and modify the message intervals and message notifications prior to activating the actual **UPS/400**.

You can customize **UPS/400** to your environment so that messages are sent at up to six intervals that you specify. **UPS/400** also ends active processes and subsystems according to your present instructions. Field-sensitive help information is provided to assist you in understanding and customizing **UPS/400**.

In the event of a power loss, system shutdown activities will occur in four basic stages.

STAGED SHUTDOWN PROCEDURES

Once installed and customized, **UPS/400** will interact with the system administrator and online users to effect an orderly shutdown if a UPS power loss occurs. Actions will be taken in the following stages:

Stage 1: Alert

- The system operator is notified that power has been lost and **UPS/400** has taken control.
- Users are alerted that they are on UPS power and asked to complete critical tasks before possible signoff.

Stage 2: Preliminary Shutdown

- Continued periodic notifications of shutdown severity status are sent to the system operator
- Specified Job Queues are held
- Users are notified to end tasks and log off due to continued outage
- Specified subsystems are being ended in anticipation of continued power outage
- User specified procedures (optional) are run at indicated time intervals

Stage 3: Critical Shutdown

- System operator is notified that full system shutdown has been initiated
- All remaining subsystems are ended
- All active users are logged off
- A full system AS/400 power down is performed

Stage 4: System Restore and Follow-up Monitoring

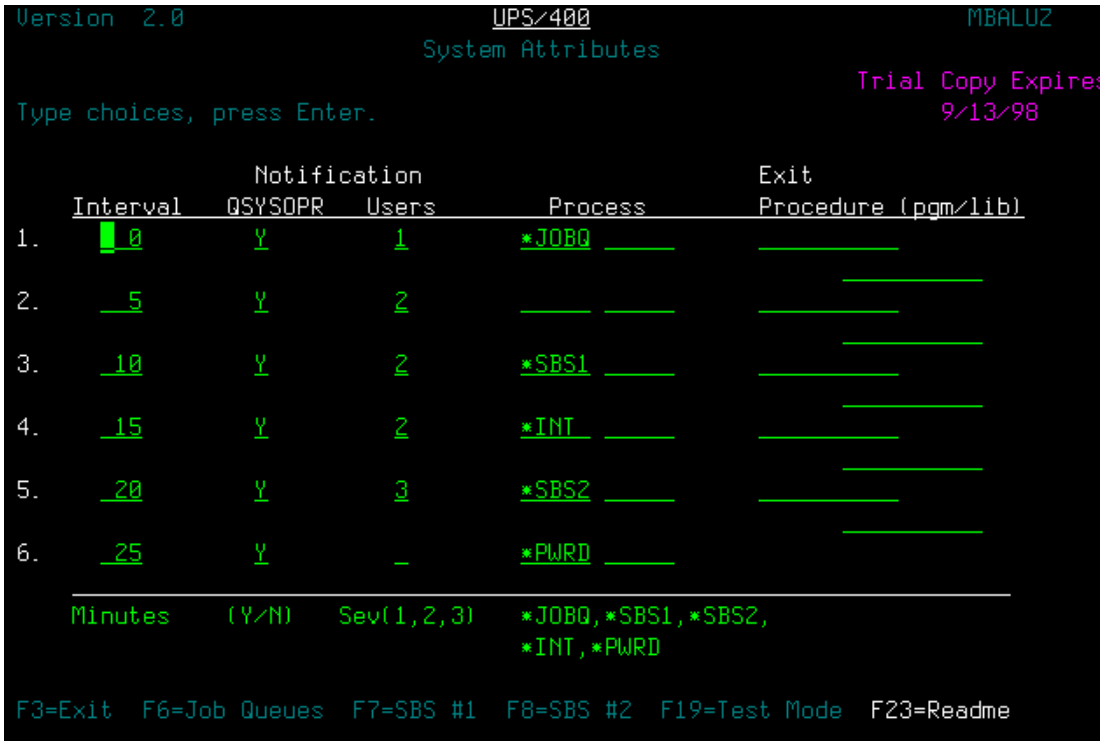
- If power is returned, all active users are notified and the system is fully restored to its original active state.
- Remaining battery power is monitored by the system administrator through a UPS current status display which visually depicts remaining battery life by means of a “battery life line.”

These stages should not be confused with the six staged intervals used during actual **UPS/400** shutdown processing.

USER-CONTROLLED SHUTDOWN PROCEDURES AND MESSAGES

You may define **UPS/400** shutdown procedures using the System Attributes display. This display is used to specify the actions to be taken at the six intervals, including Job Queues to be held, Sub-Systems to end, and the severity level of the message to be issued. A complete description of this display and its options are shown on the following pages.

The current UPS Status display can be used to monitor remaining battery life during and after shutdown procedure. The following page shows a flowchart of **UPS/400** shutdown activities.



TECHNICAL SUPPORT

For direct technical support on **UPS/400** call … (918) 587-1500

Faxes may be sent to …… (918) 587-1536

Modem dial-in for PTF’s and Updates …… (918) 587-6923

UPS/400 . . . an IBM AS/400 UPS power monitoring system . . .

INSTALLATION/REINSTALLATION INSTRUCTIONS

If you are installing **UPS/400** for the first time or reinstalling, the instructions are the same. The program will install the product for you. If you are re-installing **UPS/400**, the installation program will create a library (UPSMBKU) where it will back up the library UPS400 before it begins installation. At the end of a successful installation, you can delete the library UPSMBKU. If you are using **UPS/400** with multiple AS/400s in an APPN network environment, you must load a copy of **UPS/400** on each machine that is to be monitored in the network.

Sign on as QSECOFR and load the distribution media or follow instructions below for internet download.

First Installation — CD

1. Load CD into the CD-ROM drive
2. Enter the following command: **`LODRUN DEV(*OPT)`**
3. The CD-ROM product installation menu is displayed. To install UPS/400, please enter a 1 beside UPS/400.
4. The product information will automatically be installed.
5. Use the command STRUPS400 to access the UPS/400 Main Menu.

First Installation — Tape

1. Load tape in the appropriate drive
2. At the command line type: **`RSTLIB SAVLIB(MBAINST) DEV(device name)`**
3. Execute the install command:
   `MBAINST/MBAINST PRODUCT(UPS) ACTION(*INSTALL) DEV(device name)`
4. Use the command GO ICM to access the ICOM/400 Main Menu.

Upgrade

1. Back-up your current UPS/400 system (library UPS400).
2. Follow steps for the proper media format above.
3. **NOTE**: If you are upgrading to a new system, you will need to restore the old product library on the new system before proceeding with step 1.

Internet Download Installation

1. At the AS/400 command prompt, type: **CRTLIB UPSTRIAL**, then: **CRTSAVF UPSTRIAL/UPSTRIAL**
2. Go to the Pinnacle website at http://www.pbsnow.com, go to "Products." Go to "UPS/400" and click on "Download your 30-day free trial" at the bottom of the page. You will be asked to register before download. Follow the instructions for download.
3. After downloading, open a DOS session on the PC and at the prompt type: ***cd/****[name of directory where you downloaded the*
4. Then type: ***FTP*** *[name of your AS/400 or its TCP/IP address]*
5. Type your AS/400 user profile and press enter. Type your password and press Enter.
6. Type: *bin*
7. Type: *put* ***UPSTRIAL.SAV UPSTRIAL/UPSTRIAL.SAVF***
8. Type: ***quit*** and press enter, then: ***exit*** and press enter
9. Back at the AS/400 command prompt, type:

```
RSTOBJ OBJ(*ALL) SAVLIB(UPSTRIAL) DEV(*SAVF) SAVF(UPSTRIAL/UPSTRIAL)
```

10. You should receive a message indicating that five objects were restored.

    Note: You may see a security message. Don't be alarmed.

11. Type: **CALL *UPSTRIAL/UPSINST***
12. To start UPS/400, type **STRUPS400** or **GO UPSMON** on a command line.

You will be presented with the option to specify **UPS/400** Autostart features at this time. A prompt will be displayed, asking if you wish to use the **UPS/400** Autostart Job:

"___ Install the UPS/400 modified System Startup Program (Y/N)."

A response of Y will change the system value QSTRUPPGM to point to Program QSTRUP in UPS400. This will allow **UPS/400** to restart after IPLs. A response of N will cause no changes to be made to the IBM supplied startup program. You may elect to use the **UPS/400** Autostart Job at any time by pressing F10 while on the **UPS/400** System Attributes screen or you can include the supplied source code (UPS400/UPSSRC member QSTRUP) in your own start-up program.

NOTE: **UPS/400** program fixes can be applied by the customer through Automated Customer Support (ACS) which has been supplied to you on your **UPS/400** installation media. This feature permits online scanning and downloading of appropriate PTFs by the user through access to PBS's host AS/400. See the Remote Customer Support section at the back of this manual for instruction on how to install and use this feature.

GETTING STARTED

Use the command STRUPS400 to start **UPS/400**. This will transfer you to the **UPS/400** Main Menu.

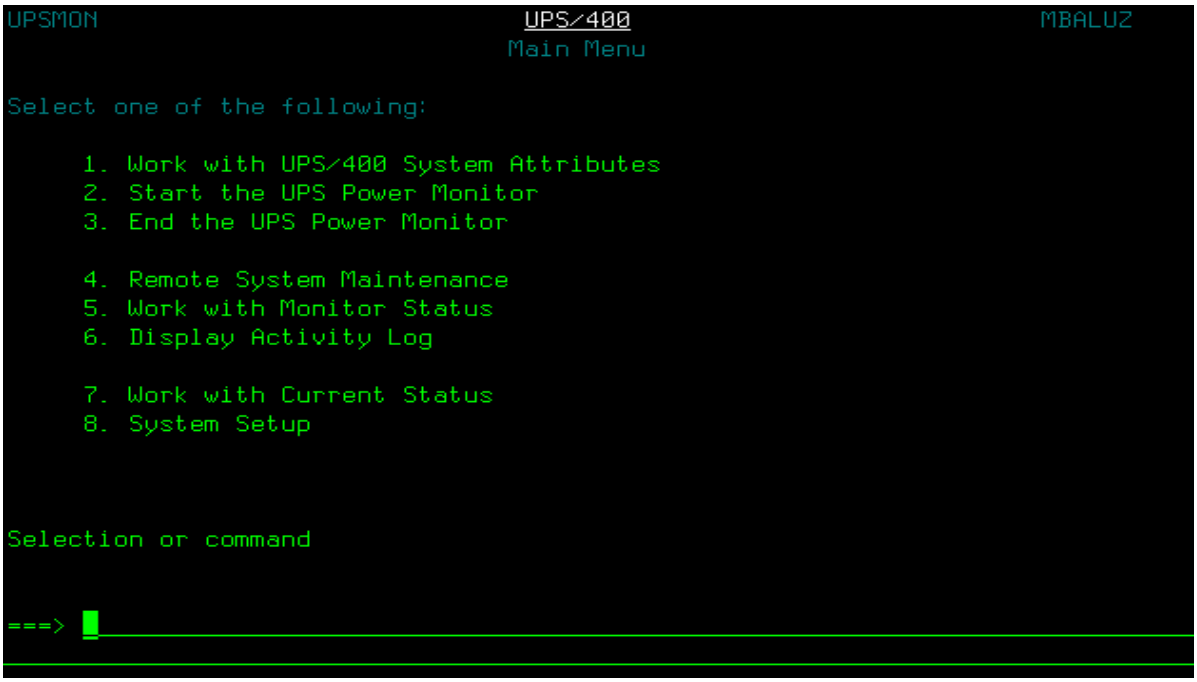
Because **UPS/400** runs within its own subsystem, a userid named UPS400 was set up during the installation process. The userid UPS400 will own the UPS monitoring process and will have a password set to *NONE to assure protection against unauthorized user. This userid has an authority level comparable to QSECOFR but cannot be QSECOFR. To review this user profile, enter DSPUSRPRF USRPRF(UPS400).

To execute **UPS/400**, a user must (a) be within one of the following user classes: *SECADM, *SECOFR, *SYSOFR, or (b) have a special authority of *ALLJOB or *SECADM.

RESTARTING AFTER AN IPL

To use **UPS/400** startup program, the IBM system value QSTRUPPGM should be set to Program QSTRUP in UPS400. This will allow **UPS/400** to restart itself after IPLs. You may elect to use the **UPS/400** Autostart Job at any time by pressing F10 while on the **UPS/400** System Attributes screen or you can include the supplied source code (UPS400/UPSSRC member QSTRUP) in your own start-up program.

MAIN MENU



This is the main menu for **UPS/400** that provides access to all other system functions. However, where the user knows the display name, a menu transfer can be made directly to the desired system function. HELP is available from all screens and cursor sensitive HELP is available where applicable.

Option

1. **Work with UPS/400 System Attributes**: Permits user specification of system attributes used to control **UPS/400** during the UPS monitoring process. To use Option 1, the monitor cannot be active. If you find that the monitor is active, select Option 3 to end the monitor and then proceed with Option 1. After working with the **UPS/400** System Attributes, restart the monitor using Option 2.
2. **Start the UPS Power Monitor:** Selection of this option starts the **UPS/400** power monitor. The message "***UPS/400 Power Monitor Started…"*** appears at the bottom of the Main Menu to confirm that the monitor has been started.
3. **End the UPS Power Monitor:** Selection of this option ends the **UPS/400** power monitor. The message "***UPS/400 Power Monitor Ending…"*** appears at the bottom of the Main Menu to confirm that the monitor is ending.
4. **Remote System Maintenance:** Selection of this option allows the user to identify network AS/400s that will be notified by the **UPS/400** power monitor. The AS/400 that serves as the notifying AS/400 for the network will not be listed in this table, but all other AS/400s in the network will be listed in the table.
5. **Work with Monitor Status:** Selection of this option allows the user to work with active **UPS/400** jobs as well as review the overall status of the AS/400 activity. This screen is the same as the "Work with Active Jobs" AS/400 command except that only **UPS/400** jobs are listed.
6. **Display Activity Log:** All activity is logged. Clearing messages from the log is at the discretion of the user.
7. **Work with Current Status:** Selection of this option displays the current **UPS/400** system status. This includes information such as remaining battery life, number of power failures since last recharge, chronological logging of power down step processed, and other information pertinent to a systematic power down process.
8. **System Setup:** Selection of this option allows the user to work with setting the values that are global in nature to the operations of **UPS/400**. This includes information specific to your type of UPS, as well as requirements for system power down.

System Attributes

The System Attributes display is used to identify the system parameters to be used by **UPS/400** to create an orderly system shutdown during a power loss. During a trial period of **UPS/400**, the date the trial copy expires is displayed on the screen. This trial expiration date is 30 days after the date you installed **UPS/400**. After the system has been purchased and the copy made permanent, this information does not display.

Test mode for UPS/400: When **UPS/400** is installed, the system is in Test mode. This is indicated by the flashing "*** Test mode ***" at the bottom right hand corner of the screen. Test mode allows the user to completely simulate a power loss as well as review the **UPS/400** monitoring process that would take place if a real power loss had occurred. If you wish to run a simulation of the monitoring process, notify all users prior to the test as messages would be sent to their terminals, notifying them of a power loss. Test mode utilizes all intervals and notification specified in the System Attributes screen, but does not shut down any processes or execute user Exit Procedures. See the System Attributes (Test mode) page for a further explanation of this function.

The System Attributes screen contains default values. These should be reviewed/modified by the user as follows prior to starting **UPS/400**.

Interval: Intervals are expressed in minutes and are the times that **UPS/400** will check system status and perform specified functions. At each interval, **UPS/400** will notify the system operator and/or users with severity messages, begin specific processes and execute exit procedures. Six intervals are provided, although the user may use less than this number. **Note**: Intervals are used in calculation estimated power down times for severity messages. The first interval can be 0, which means that **UPS/400** will issues its first message immediately upon power loss detection.

Intervals will be automatically adjusted when the remaining battery life is less than the last interval. A message will be sent to the system operator message queue of the adjusted percentage.

Notification - QSYSOPR: Specify (Y/N) if you wish **UPS/400** to notify the system operator during a specified interval. Normally, the system operator would be notified (Y) at all times during a power loss situation.

Notification – Users: Specify is you wish **UPS/400** to notify all active users during a specified interval. Notification of users is handled by severity messages ranging from level 1 (least severe) to level 3 (most severe – see Test mode for severity message text). If you do not wish to notify active users at a given interval, leave the field blank. The same severity message can be used at several intervals.

While in Test mode, messages will not actually be sent to users, but entries in the Current Status display will show as though they were sent.

Process: One or two processes may be specified at each interval. Valid processes are:

***JOBQ**	Hold all specified job queues (F6).
***SBS1**	End all specified subsystems in SBS1 (F7).
***SBS2**	End all specified subsystems in SBS2 (F8).
***INT**	End all interactive users that are on the system.
***PWRD**	Power the system down.

Processes *JOBQ, *SBS1, and *SBS2 are specified via pop-up windows describes below and illustrated in the System Attribute example on the following page.

Exit Procedure: The exit procedure is used to specify user written programs that you wish **UPS/400** to execute as part of the orderly power down process. These programs must complete processing within the duration of the current interval and the last interval. If processing does not complete in that time span, the

user program will be ended when the power down occurs. NOTE: There is no exit procedure specified at the last interval

F6 = Job Queues: Pressing F6 provides a pop-up window that allows the entry of job queues that you wish **UPS/400** to hold during the orderly power down. If the power is restored, these jobs queues will be released. Format is Program/Library.

F7 = SBS #1: Pressing F7 provides a pop-up window that allows the entry of a list of subsystems that you wish **UPS/400** to end during a specified format. These subsystems will be ended first and should be those that have the least impact on your system. When the power is restored, these subsystems will be restarted. Format is Subsystem/Library.

F8 = SBS #2: Pressing F8 provides a pop-up window that allows the entry of a second list of subsystems that you wish **UPS/400** to end during a specified interval. These subsystems have the greatest impact on your system (i.e. batch and/or interactive usage). If power is restored, these subsystems will be restarted. Format is Subsystem/Library.

F10 = UPS/400 Autostart Job: Pressing F10 (not shown on screen) allows the user to (Y/N) decide whether to use the **UPS/400** Autostart Job. A response of Y will change the system value QSTRUPPGM to point to program QSTRUP in UPS400. This allows **UPS/400** to restart itself after IPLs. A response of N will cause no changes to be made to the IBM supplied startup program. You may elect to use the **UPS/400** Autostart Job at any time by pressing F10 while on the **UPS/400** System Attributes screen. Additionally, the user may elect to include source code found in UPS400/UPSSRC member QSTRUP in your own startup program.

F19 = Test mode: Pressing F19 allows you to toggle back and forth in the Test mode for **UPS/400**.

F23 = Read Me: Pressing F23 provides an online **UPS/400** User Manual. F24 will print the online **UPS/400** User manual.

System Attributes Screen

System Attributes (Test mode)

Test mode of **UPS/400** is turned on or off from the **UPS/400** System Attributes display by pressing F19 (not shown on the screen). Test mode should not be started until all entries have been made in the System Attributes screen. After turning Test mode on the user should exit to the Main Menu and Start the UPS Power Monitor (Option 2). Several items should be noted before proceeding with a test:

1. While in Test mode the AS/400 will not be powered down, nor will job queues be held, subsystems ended, user messages and user procedures executed. Message delivery to the system operator and/or users will take place at intervals specified in the System Attributes screen.
2. When the monitor is started, the message will indicate Test mode.

Two commands allow the simulation of a power loss and restoration without actually disconnecting power or having to restore it. They are SIMPWRLOSS (simulate power loss) and SIMPWRRST (simulate power restore). To begin the Test mode process, start the UPS monitor (Main Menu Option 2), then type SIMPWRLOSS on the **UPS/400** Main Menu command line. **UPS/400** will now begin simulating a power loss and sending messages to the system operator and/or users at the specified intervals. The SIMPWRRST command may be used at any time to end the test. If you let the test run to completion, a message will be issued to QSYSOPR that the system would have been powered down, but that **UPS/400** was in Test mode.

UPS/400 should be further tested by actually disconnecting power to the AS/400. This testing should only be done after thoroughly testing your UPS hardware. We strongly recommend that testing be performed when the machine is not in use and when skilled systems/technical personnel are available.

Standard **UPS/400** severity level 1, 2, and 3 messages are available, as well as the power restoration message. Severity codes for messages 1 through 3 can be used on the System Attributes display to specify which message is to be sent at each interval.

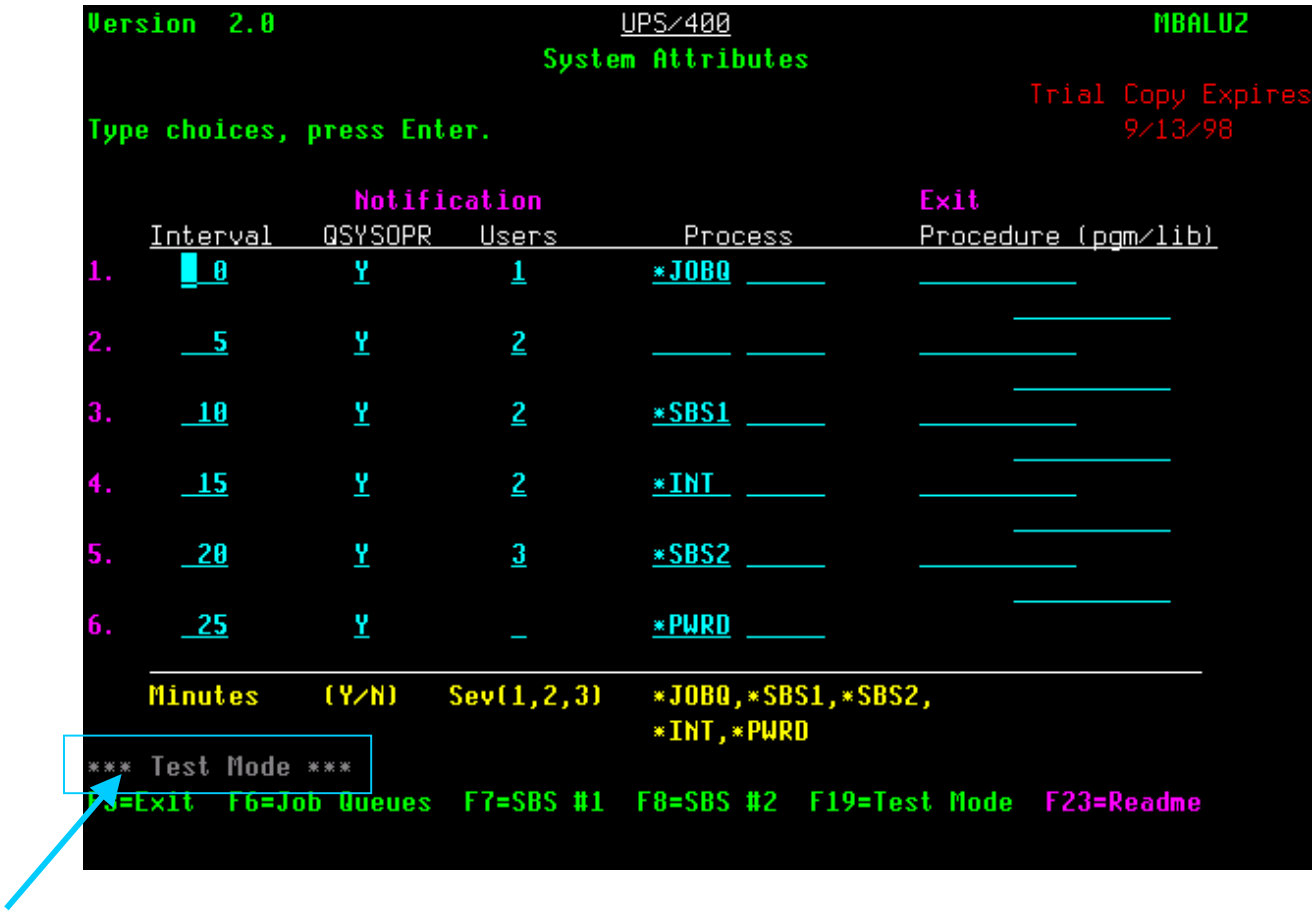
Severity 1: **"Attention – The AS/400 has lost power and is running on battery backup. Be ready to sign off if the condition is not corrected. Estimated battery life is 25 minutes."**

Severity 2: **"Warning – The AS/400 has lost power and continues to run on battery backup. Please complete your processing as soon as possible to avoid data lost. Estimated battery life is 15 minutes."**

Severity 3: **"*** Emergency *** – Due to continued power loss on the AS/400 you are required to immediately sign off. Estimated battery life is 5 minutes."**

Power Restore: **"ATTENTION: POWER RESTORED! The AS/400 has just been switched back to regular service. System will 'NOT' be powered down."**

SYSTEM ATTRIBUTES SCREEN (TEST MODE)



AN EXAMPLE

The following narrative describes an example of the functions performed by **UPS/400** during a power loss. The functions performed are based on the system default values carried in the System Attributes screen.

The system administrator has a UPS system for the AS/400 with a recharge time of 120 minutes. The administrator has determined that the orderly shutdown process should take 25 minutes, broken up into 5, five-minute intervals with immediate notification of the system operator upon detection of power loss.

Interval 1: The system operator is notified immediately that a power loss has been detected. Active users are likewise notified immediately with a severity level 1 message: **"Attention – The AS/400 has lost power and is running on battery backup. Be ready to sign off if the condition is not corrected. Estimated battery life is 25 minutes." UPS/400** performs the process *JOBQ which holds QBATCH. A user program has been specified (USEREXIT) that begins during interval 1.

Interval 2: After 5 minutes the system operator is notified with a severity level 2 message: **"Warning – The AS/400 has lost power and continues to run on battery backup. Please complete your processing as soon as possible to avoid data lost. Estimated battery life is 20 minutes."** Users are not notified at this interval nor are any process or user exits specified.

Interval 3: After 10 minutes the system operator is notified with another severity level 2 message: **"Warning – The AS/400 has lost power and continues to run on battery backup. Please complete your processing as soon as possible to avoid data lost. Estimated battery life is 15 minutes."** Users are sent the same severity level 2 message as the system operator. The process *SBS1 begins ending subsystems QSNADS and QSPL.

Interval 4: After 15 minutes the system operator is notified with another severity level 2 message: **"Warning – The AS/400 has lost power and continues to run on battery backup. Please complete your processing as soon as possible to avoid data lost. Estimated battery life is 10 minutes."** Users are sent the same severity level 2 message as the system operator. The process *INT begins, ending interactive users one at a time.

Interval 5: After 20 minutes the system operator and users are notified with a severity level 3 message: **"*** Emergency *** – Due to continued power loss on the AS/400 you are required to immediately sign off. Estimated battery life is 5 minutes."** The process *SBS2 begins ending subsystems QBATCH, QINTER, and QCMN.

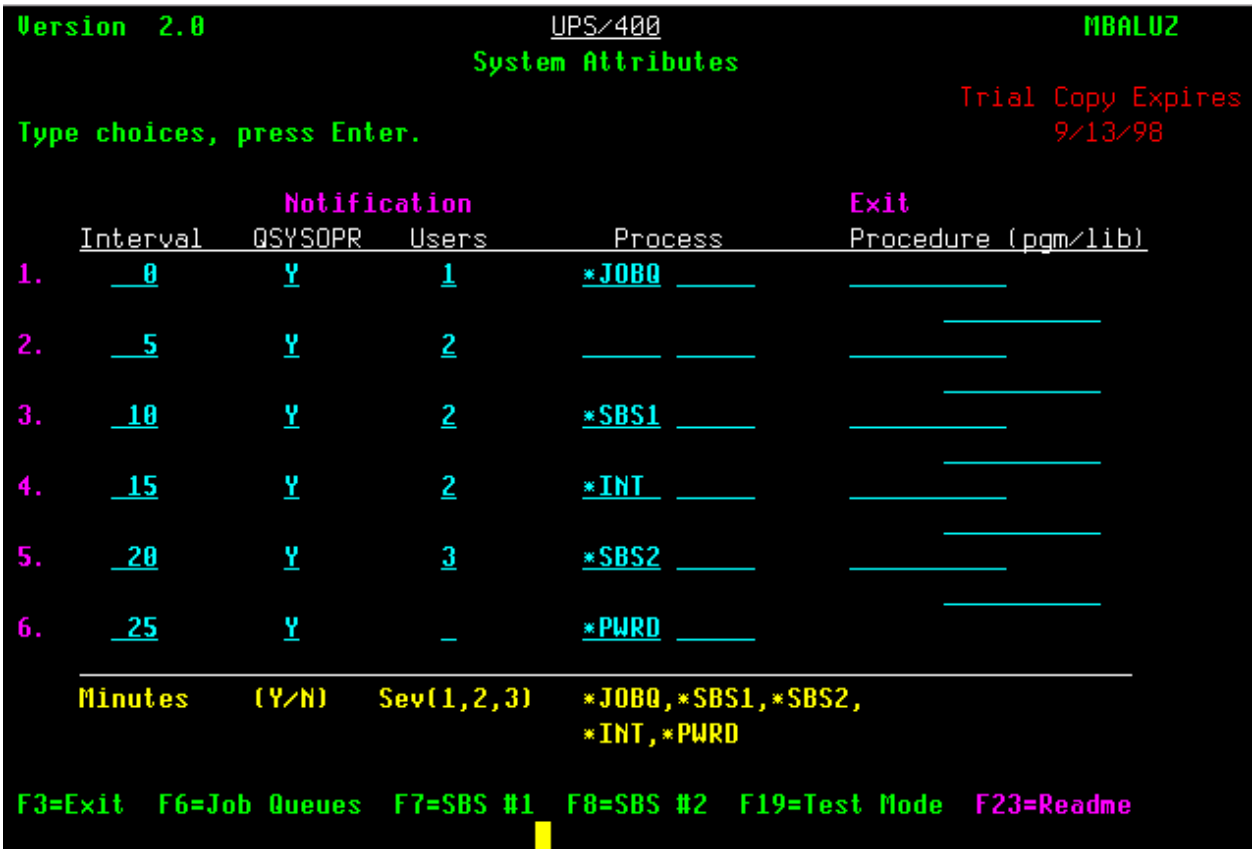
Interval 6: After 25 minutes **UPS/400** will notify the system operator that the AS/400 is being powered down and then power down the system.

If during the **UPS/400** orderly shutdown, power had been restored the message would have been sent to the system operator and active users: **"ATTENTION: POWER RESTORED! The AS/400 has just been switched back to regular service. System will 'NOT' be powered down."**

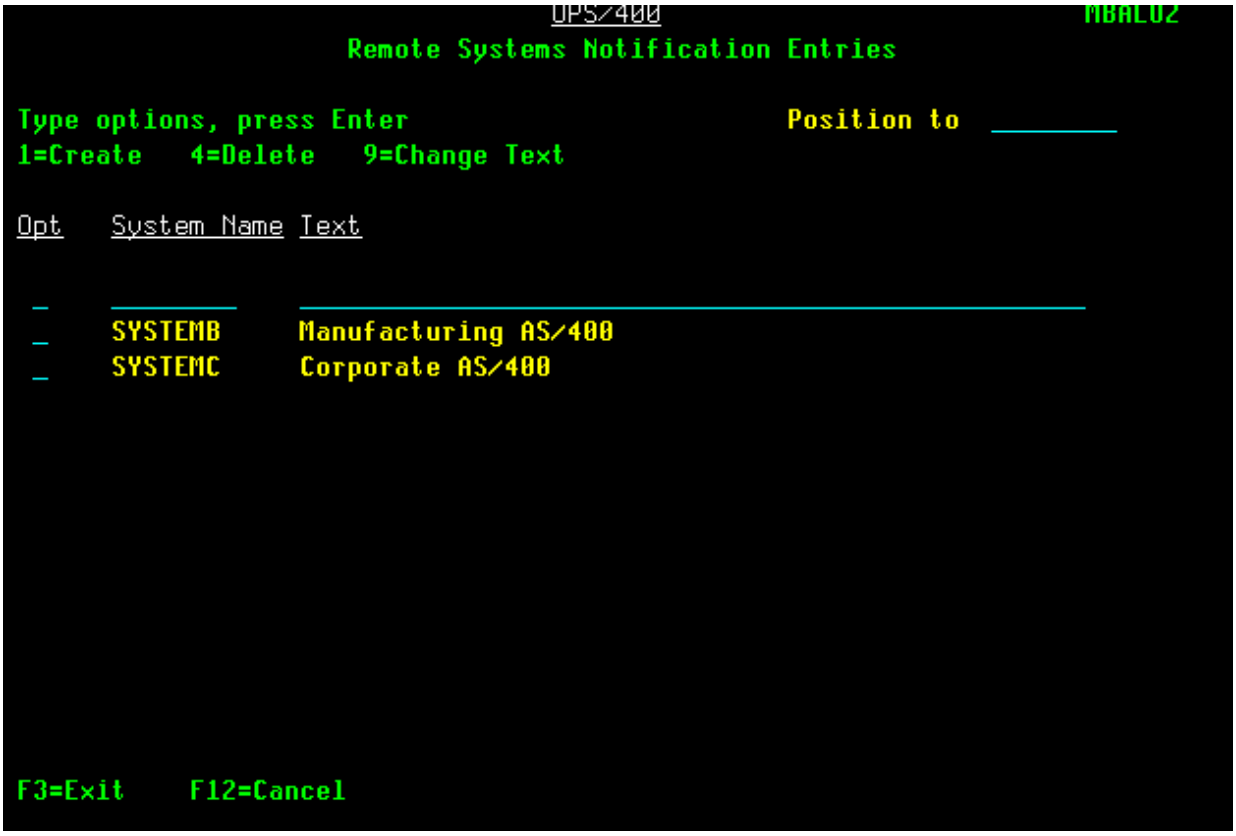
This example can be simulated in Test mode, or can be modified to specify your specific UPS shutdown requirements, and then tested.

SYSTEM ATTRIBUTES SCREEN
(EXAMPLE – SYSTEM DEFAULTS)

These values will be used where not modified by the system operator.



REMOTE SYSTEMS MAINTENANCE (NETWORKING)



The Remote Systems Maintenance screen allows the user to identify remote network AS/400s that will be notified by **UPS/400** in case of a power failure and subsequent power restoration. Any AS/400 in the network may serve as the notifying AS/400 with all others identified as remote systems. **UPS/400** will manage an orderly system and power shutdown on the notifying machine as well as each of the remote AS/400s. Note that a copy of **UPS/400** must be loaded on each machine that is to be monitored in the network (see chart on the following page).

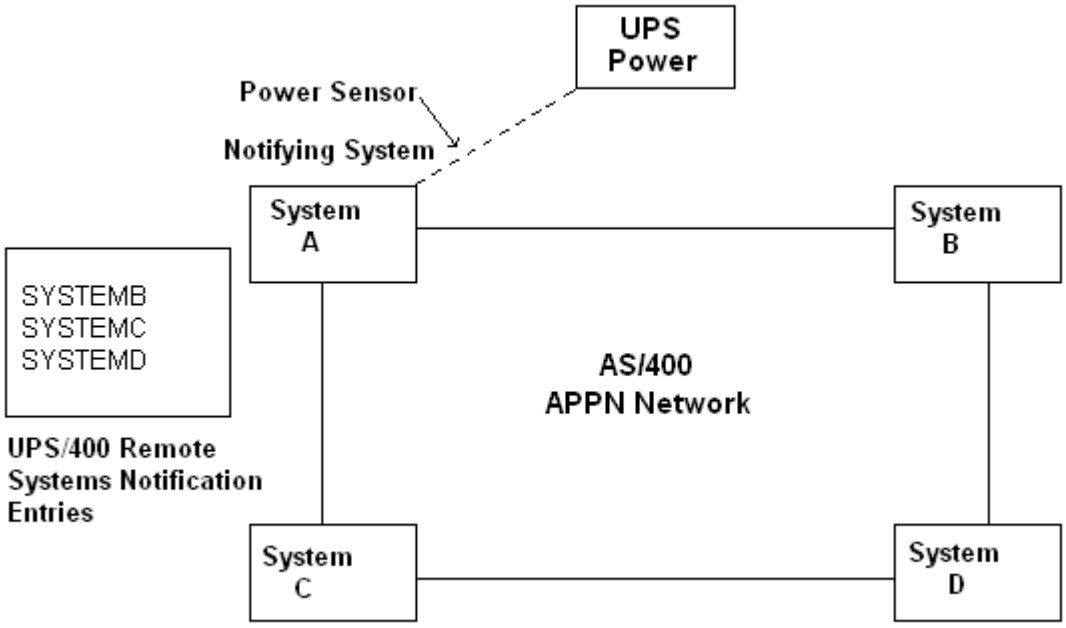
Option

1 = Create: Permits the user to identify each remote system name and short description of the remote system.

4 = Delete: Permits the user to delete entries from the list of remote systems.

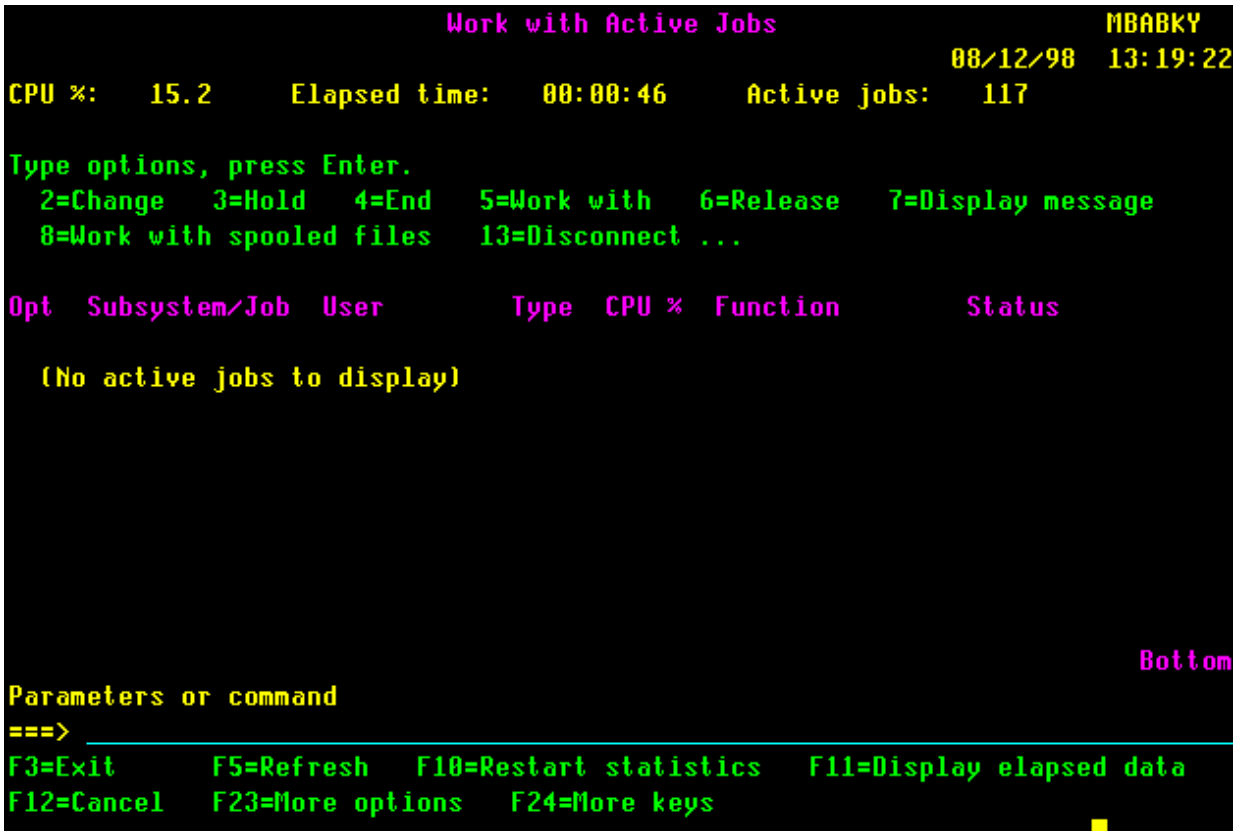
9 = Change Text: Permits the user to change the description of the remote system.

UPS/400 NETWORK SUPPORT



Note: The sensor cable from the UPS may be connected to an AS/400 on the network. All AS/400s to be networked should be connected to the same power source. The AS/400 with the sensor cable is the "notifying system," however any system detecting failure or restore of utility power will notify ALL systems in its Remote Systems Notification Table (i.e. System A table would contain B, C, and D; System B table would contain A, C, and D, etc.). If the "notifying system" is disabled for any reason, the power sensor cable should be reconnected to an active machine. Network capabilities of **UPS/400** depend upon the existence of an AS/400 APPN defined network. Multiple power sensor cables can be used.

WORK WITH MONITOR STATUS


Work with Active Jobs
MBABKY
08/12/98 13:19:22
CPU %: 15.2 Elapsed time: 00:00:46 Active jobs: 117
Type options, press Enter.
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message
8=Work with spooled files 13=Disconnect ...
Opt Subsystem/Job User Type CPU % Function Status
(No active jobs to display)
Bottom
Parameters or command
===>
F3=Exit F5=Refresh F10=Restart statistics F11=Display elapsed data
F12=Cancel F23=More options F24=More keys

The Work with Active Jobs display shows the performance and status information for jobs that are currently active on the system. All information is gathered on a job basis. The jobs are ordered on the basis of the subsystem in which they are running. Jobs that run in a subsystem (autostart jobs, interactive jobs, batch jobs, readers and writer) are alphabetized by job name and indented under the subsystem monitor field they are associated with. Subsystem monitors (with the jobs in the subsystem grouped under each monitor job) are alphabetized and presented before system (SYS) jobs. The system jobs (SCPF, QSYSARB, QLUS) are alphabetized by job name and presented following the subsystem monitors and jobs within the subsystems.

It is possible for a job to not appear on the WRKACTJOB display even though an active status is shown for the job on one of the following displays:

- Work with Job (WRKJOB)
- Work with Subsystem Job (WRKSBSJOB)
- Work with Submitted Jobs (WRKSBMJOB)
- Work with User Jobs (WRKUSRJOB)

This is because a status indicator that is used to determine whether a job is active in the job's internal structure indicates an active status just before and just after the actual processing of the job. Normally, the amount of time that a job is in this state is very short, but the following conditions can make it longer:

- If there are many jobs in the system competing for processor use, each job has a smaller share of processor time, which can increase the amount of time a job is in this state.
- The machine does not start the process for the job until an activity level is available for the job being started. If the activity level has already been reached, the job remains in this state until an activity level is available.

- The subsystem can be interrupted while the job is in this state by other requests such as a user signing on. The job remains in this state until the subsystem has finished processing all of these requests.

CPU%: This shows the average of processing unit time used by the system during the elapsed time. This percentage compares to the ratio of the total amount of processing unit time used during the elapsed time to the total elapsed time. The value in this field is normally higher than the sum of the processing unit time percentages used by the active jobs displayed because it includes processing unit time used by system overhead, excluded job, and jobs that have ended during the measurement time interval. This field is zero when the elapsed time is zero. If there are multiple processors on the system, this field contains the average processing unit time of the processors.

ELAPSED TIME: This shows the amount of time that has elapsed between the measurement starting time and the current system time. This field is present in hours, minutes, seconds. This field is zero when the display is initially requested, or when the display is restarted by pressing the F10 key. The current system time (end of elapsed interval) is displayed beneath the system name.

ACTIVE JOBS: This shows the current number of jobs active in the system (jobs that have been started, but have not yet ended), including both user and system jobs.

Options

2 = Change: Use this option to run the Change Job (CHGJOB) command. If no value is specified on the parameter's input field, default parameters are shown when you press the F4 key. However, when values have been specified on the parameter's input field, the command is run without the prompt appearing when you press the Enter key. Similarly, when you press the F4 key, the specified values are highlighted, and defaults are shown for remaining parameters. This option is not valid for system or subsystem monitor jobs. CHG replaces the status field if the command runs successfully.

3 = Hold: Use this option to run the Hold Job (HLDJOB) command; the job's spooled files are not held unless the default for the Hold Spooled Files (SPLFILE) parameter is overridden by using the Parameter's input field. Select the Hold Reader (HLDRDR) command if this option is selected for a spooling reader job, or the Hold Writer (HLDWTR) command if this option is selected for a spooling writer job. This option is not valid for system or subsystem monitor jobs. HLD replaces the status field if the command was run successfully.

4 = End: Use this option to run the End Job (ENDJOB) command; the job's spooled files are not deleted unless the default for the Deleted Spooled File (SPLFILE) parameter is overridden by using the parameter's input field. Unless the OPTION parameter is overridden by the parameter's input field, a controlled end is performed as if the End Job (ENDJOB) command was typed with all the default parameter values assumed. The End Reader (ENDRDR) or End Writer (ENDWTR) command (with OPTION(*CNTRLD)) is issued if this option is selected for spooling reader or spooling writer job. This option is not valid for system or subsystem monitor jobs. END replaces the status field if the command was run successfully.

5 = Work with: Use this option to run the Work with Job (WRKJOB) command, which displays the Work with Job Menu. The Work with Job Menu allows you to select options to work with:

The possible options are:

- Job status attributes
- Job definition attributes
- Job run attributes
- Job spooled files
- Job log information
- Job program stack information
- Job locks
- Library list information

- Open file information
- File override information
- Commitment control status
- Communications status information

In addition, the Work with Job Menu allows you to select options to change, hold, release, or end the job. The Work with Reader (WRKRDR) or Work with Writer (WRKWTR) command is issued if this option is selected for a spooling reader or spooling writer job.

6 = Release: Use this option to run the Release Job (RLSJOB) command which releases the job if it is in the held condition. The Release Reader (RLSRDR) or Release Writer (RLSWTR) command (with OPTION(*CURRENT)) is run if this option is selected for a spooling reader or spooling writer job. This option is not valid for system or subsystem monitor jobs. RLS replaces the status field if the command was run successfully.

7 = Display message: Use this option to display the message for which the job is waiting.

8 = Work with spooled files: Use this option to display the job's spooled output files.

9 = Exclude: Use this option to exclude the job from the display. The option has no effect on the job; it only affects the display.

10 = Display program stack: Use this option to display the job's program stack

11 = Work with locks: Use this option to work with the job's locks

13 = Disconnect: Use this option to run the Disconnect Job (DSCJOB) command. All jobs at the device will be disconnected.

SUBSYSTEM/JOB: This shows the name of the job as identified to the system. Jobs that run in a subsystem (autostart jobs, interactive jobs, batch jobs, reader, and writers) are indented two positions under the subsystem monitor job they are associated with. The indentation shows the jobs that are contained in a subsystem. Subsystem monitors and system jobs are not indented. If the job type is multiple requester terminal (MRT), the job name is the MRT procedure name.

A plus (+) sign next to the first character of the job name indicates that the job is an active job of a group. Suspended group jobs (GRP shows as the prefix in the Function column) are excluded from the display unless the F14 key is pressed. Pressing the F14 key again will cause the suspended group jobs to be excluded once again. When suspended group jobs are shown, the plus sign is not displayed.

USER: The user name identifies the user who submits the job and the user profile under which the job is run. If the job type is multiple requester terminal (MRT), the user name is the user that initially started the MRT job. The user name is the same as the user profile name and can come from several different sources, depending on the type of job:

- **Batch job:** The user name is specified on the Submit Job (SMBJOB) command, or it is specified in the job description referred to by the JOB or SBMJOB commands.
- **Interactive job:** The user name is typed in at sign-on, or the user name is provided from the default in the job description referred to by the work station's job entry.
- **Autostart job:** The user name is specified in the job description referred to by the job entry for the autostart job

TYPE: This shows the type of active job. Possible values are:

- **ASJ**: Autostart
- **BCH**: Batch
- **BCI**: Batch immediate

- **EVK**: Started by a procedure start request
- **INT**: Interactive
- **MRT**: Multiple request terminal
- **PJ**: Prestart job
- **PDJ**: Print driver job
- **RDR**: Reader
- **SBS**: Subsystem monitor
- **SYS**: System
- **WTR**: Writer

ELAPSED CPU%: The percent of processing unit time attributes to this job over the elapsed time compared to the measurement time interval.

FUNCTION: The high-level function being performed by the job. This field is blank when a logged function has not been performed. The prefix of this field indicates what the characters that follow the hyphen represent:

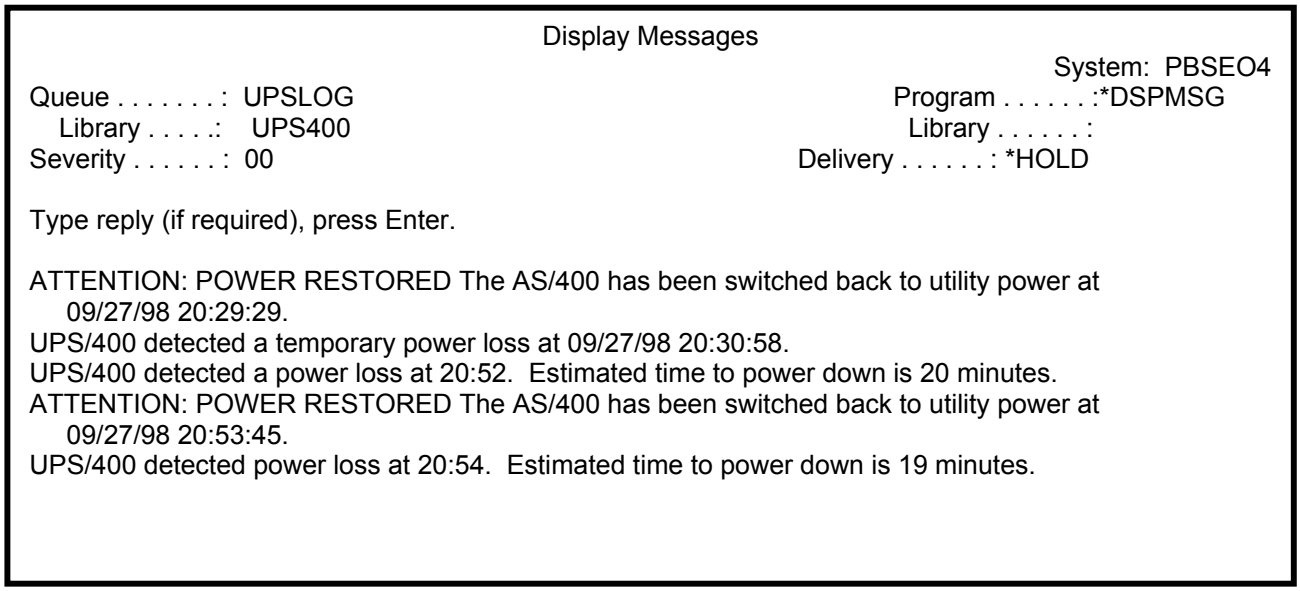
- **CMD**: The command is run interactively, or in a batch input stream, or requested from a system menu. Commands in the CL programs are not logged.
- **DLY**: This job is processing a DLYJOB (Delay Job) command. The time displayed is the number of seconds that job is delayed (up to 999999 seconds), or the time when the job is to resume processing (hh:mm:ss), depending on how the command was specified.
- **GRP**: The group name of a suspended group job is displayed.
- **I/O**: The job is a subsystem monitor that is performing input/output operations (I/O) to a workstation for the sign-on display file. The name displayed is the name of the work station device.
- **MNU**: The name of the menu
- **MRT**: This is a multiple requester terminal (MRT) job if the type is MRT, or an interactive job attached to a MRT job is the type is INT. If it is an MRT job, the characters that follow the dash is a number, a slash (/), and another number. The first number indicates how may requesters are currently attached to the MRT job, and the second number indicates the maximum number (MRTMAX) of requesters. NEP indicates the MRT is a “Never-ending-program” (the MRT stays active even if there are no requester of the MRT). If it is an interactive job attached to a MRT, the MRT procedure name follows the dash.
- **PGM**: The program name is the high-level program called interactively, or a program called in a batch input stream, or the initial program specified in the user profile, or the name of a system request processor. If the high-level program transfers control, the program name remains in the function field even though it is no longer in the program stack.
- **PRC**: This is the name of the procedure.
- **IDX**: The value is the name of the file associated with an index (access path) rebuild operation. The previously logged value replaces this value when the index rebuild operation has finished.
- **LOG**-**QHST**: History information is being logged to a database file.
- *** - JOBLOG**: A job log is being produced
- *** - DUMP**: A dump is in process.
- *** - ADDLACTJOB**: Auxiliary storage is being allocated for the number of active jobs
- *** - PASSTHRU**: The job is a pass-through job.
- *** - RCLSPLSTG**: Empty spooled database members are being deleted specified in the QADLACTJ system value. This may indicate that the system value for the initial number of active jobs was set too low.
- *** - ADLTOTJOB**: Auxiliary storage is being allocated for the number of jobs specified in the QADTOTJ system value
- ***-CMDENT**: The command entry display is being used
- *** - DLTSPLF**: A spooled file is being deleted.

STATUS: The status of the job. Only one status is displayed per job. A blank status field represents a job that is in transition. The possible values are:

- **BSCW**: The job is waiting for the completion of an I/O operation to a binary synchronous device.
- **CMNA**: The job is waiting for the completion of an I/O operation to a communications device in the activity level.
- **CMNW**: The job is waiting for the completion of an I/O operation to a communications device.
- **CMTW**: The job is waiting for the completion of save-while-active checkpoint processing in another job. This wait is necessary to prevent a partial commitment control transaction from being saved to the media.
- **CPCW**: The job is waiting for the completion of a CPI Communications call.
- **DEQA**: The job is waiting for completion of a dequeue operation in the pool activity level.
- **DEQW**: The job is waiting for completion of a dequeue operation. For example, QSYSARB and subsystem monitors generally wait for work by waiting for a dequeue operation.
- **DKTA**: The job is waiting for the completion of an I/O operation to a diskette device in the activity level.
- **DKTW**: The job is waiting for the completion of an I/O operation to a diskette device.
- **DLYW**: Due to the Delay Job (DLYJOB) command, the job is delayed waiting for a time interval to end, or for a specific delay end time. The function field shows either the number of seconds the job is to delay (999999), or the specific time when the job is to resume running.
- **DSC**: The job has been disconnected from a work station display.
- **DSPA**: The job is waiting for input from a work station display in the activity level.
- **DSPW**: The job is waiting for input from a work station display.
- **END**: The job has been ended with the *IMMED option, or delay time has ended with the *CNTRLD option.
- **EOFA**: The job is waiting in the activity level to try a read operation again on a database file after the end-of-file has been reached.
- **EOFW**: The job is waiting to try a read operation again on a database file after the end-of-file has been reached.
- **EOJ**: The job is ending for a reason other than End Job (ENDJOB) or End Subsystem (ENDSBS). For example, SIGNOFF, End Group Job (ENDGRPJOB), or an exception that is not being handled.
- **EVTW**: The job is waiting for an event. For example, QLUS and SCPF generally wait for work by waiting for an event.
- **GRP**: The job is suspended due to a Transfer to Group Job (TFRGRPJOB) command.
- **HLD**: The job is being held.
- **ICFA**: The job is waiting, in an activity level, for the completion of an I/O operation to an intersystem communications function file.
- **ICFW**: The job is waiting for the completion of an I/O operation to an intersystem communications function file.
- **INEL**: The job is ineligible and not currently in the pool activity level.
- **LCKW**: The job is waiting for a lock.
- **MLTA**: The job is waiting, in an activity level, for the completion of an I/O operation to multiple files.
- **MLTW**: The job is waiting for the completion of an I/O operation to multiple files.
- **MSGW**: The job is waiting for a message from a message queue.
- **MTXW**: The job is in a mutex wait. A mutex is a synchronization function that is used to allow multiple jobs or processes to serialize their access to shared data.
- **MXDW**: The job is waiting for the completion of an I/O operation to a mixed device file. Details are in the Remote Work Station Support book.
- **OPTW**: The job is waiting for the completion of an I/O operation to an optical device.
- **OSIW**: The job is waiting for the completion of an OSI Communications Subsystem/400 OSLISN, OSRACS, OSRACA, OSRCV, or OSRCVA operation.
- **PRTA**: The job is waiting for output to a printer to complete in the activity level.
- **PRTW**: The job is waiting for output to a printer to be completed.
- **PSRW**: The job is a prestart job waiting for a program start request.
- **RUN**: The job is currently running in the activity level.

- **SELW**: This job is in a select wait. More information on the select() function is in the Sockets APIs chapter in the System API Reference, SC41-4801.
- **SRQ**: The job is the suspended half of a system request job pair.
- **SVFA**: The job is waiting for completion of a Save File operation in the activity level.
- **SVFW**: The job is waiting for completion of a Save File operation.
- **TAPA**: The job is waiting for completion of an I/O operation to a tape device in the activity level.
- **TAPW**: The job is waiting for completion of an I/O operation to a tape device.
- **TIMA**: The job is waiting, in the activity level, for a time interval to end.
- **TIMW**: The job is waiting for a time interval to end.

DISPLAY ACTIVITY LOG


Display Messages
System: PBSEO4
Queue . . . . . : UPSLOG
Program . . . . . :*DSPMSG
Library . . . . .: UPS400
Library . . . . . :
Severity . . . . . : 00
Delivery . . . . . : *HOLD
Type reply (if required), press Enter.
ATTENTION: POWER RESTORED The AS/400 has been switched back to utility power at 09/27/98 20:29:29.
UPS/400 detected a temporary power loss at 09/27/98 20:30:58.
UPS/400 detected a power loss at 20:52. Estimated time to power down is 20 minutes.
ATTENTION: POWER RESTORED The AS/400 has been switched back to utility power at 09/27/98 20:53:45.
UPS/400 detected power loss at 20:54. Estimated time to power down is 19 minutes.

The Display Messages display shows messages sent to a message queue. Among the parameters shown are message queue name, delivery mode, and break handling program.

For specific information about messages, put the cursor on the message you want information about and press the Help key. An additional message information display will then be shown.

QUEUE: The name of the message queue that is being shown.

LIBRARY: The name of the library that contains the message queue being shown.

SEVERITY: A two digit value ranging from 00 through 99. The higher the value, the more severe or important the condition. The value is used when the delivery mode is *BREAK or *NOTIFY. Only messages equal to or greater than the value defined here will cause the break or notification of the message to occur.

PROGRAM: The following values may be shown:

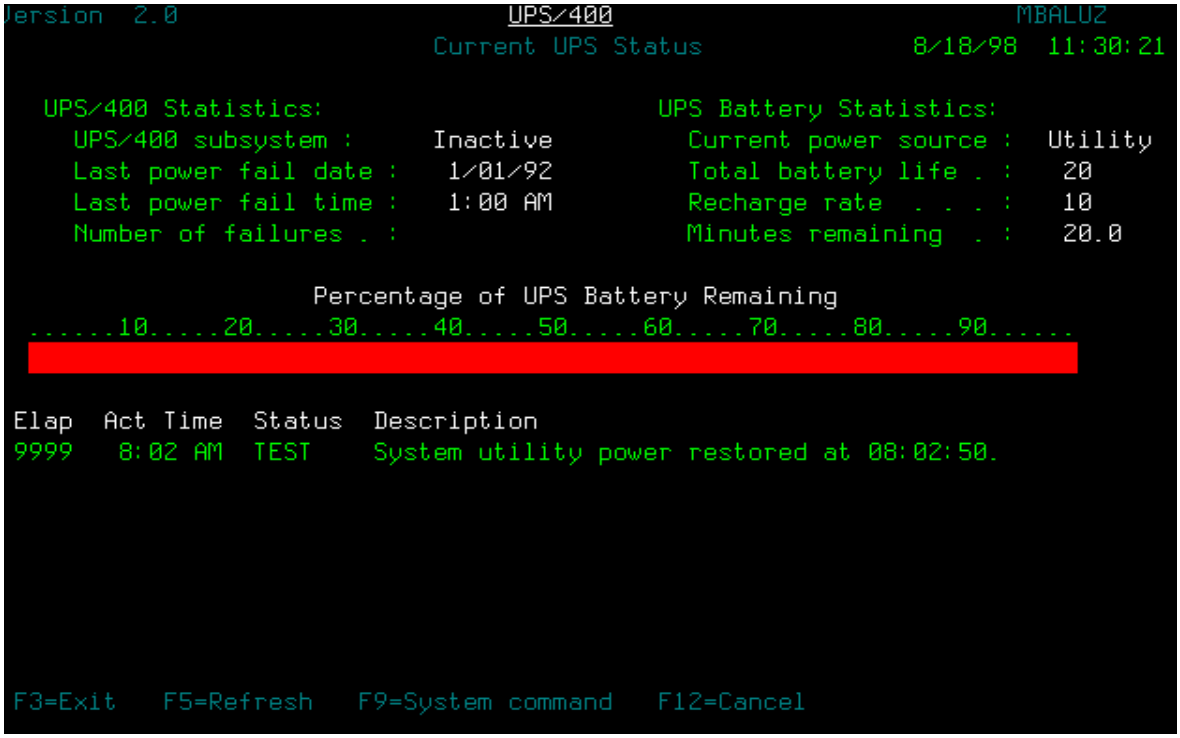
- ***DSPMSG**: When a message arrives for an interactive job with break delivery, the message is displayed.
- **A program name**: The name of the program that is called when a message arrives if the message queue is in *BREAK delivery and the message is equal to or greater than the severity value shown on the display.

LIBRARY: The name of the library that contains the break message handling program.

DELIVERY: The following values may be shown:

- ***BREAK**: The job to which the message queue is allocated is interrupted when a message arrives, and the program or action specified in the Program parameter is performed.
- ***DFT**: Messages requiring replies are answered with their default reply. No messages are added to the message queue whether they require a reply or not.
- ***HOLD**: The messages are held in the message queue until they are requested by the user or program.
- ***NOTIFY**: For an interactive job, the audible alarm at the workstation is sounded and the message-waiting light is turned on.

WORK WITH CURRENT STATUS


Version 2.0
UPS/400
MBALUZ
Current UPS Status
8/18/98 11:30:21
UPS/400 Statistics:
UPS/400 subsystem : Inactive
Last power fail date : 1/01/92
Last power fail time : 1:00 AM
Number of failures . :
UPS Battery Statistics:
Current power source : Utility
Total battery life . : 20
Recharge rate . . . : 10
Minutes remaining . : 20.0
Percentage of UPS Battery Remaining
.....10.....20.....30.....40.....50.....60.....70.....80.....90.....
Elap Act Time Status Description
9999 8:02 AM TEST System utility power restored at 08:02:50.
F3=Exit F5=Refresh F9=System command F12=Cancel

You can reach this display by pressing Option 7 (Work with Current Status) on the Main Menu. This screen displays the current **UPS/400** system status. This includes information such as remaining battery life, number of power failures since last recharge, chronological logging of power down steps processes, as well as other information pertinent to a systematic power down process.

The following is a description of **UPS/400** statistics:

- UPS/400 subsystem: Active or Inactive status of ZZUPS400, **UPS/400** subsystem
- **Last power fail date**: Date of last logged power outage
- **Last power fail time**: Time of last logged power outage
- **Number of failures**: Number of logged power outages since last full recharge of UPS batteries

The following is a description of UPS Battery Statistics:

- **Current power source**: Source of electrical power currently servicing system. May either by UPS or Utility
- **Total battery life**: Total minutes of usable battery life as defined in the System Setup screen

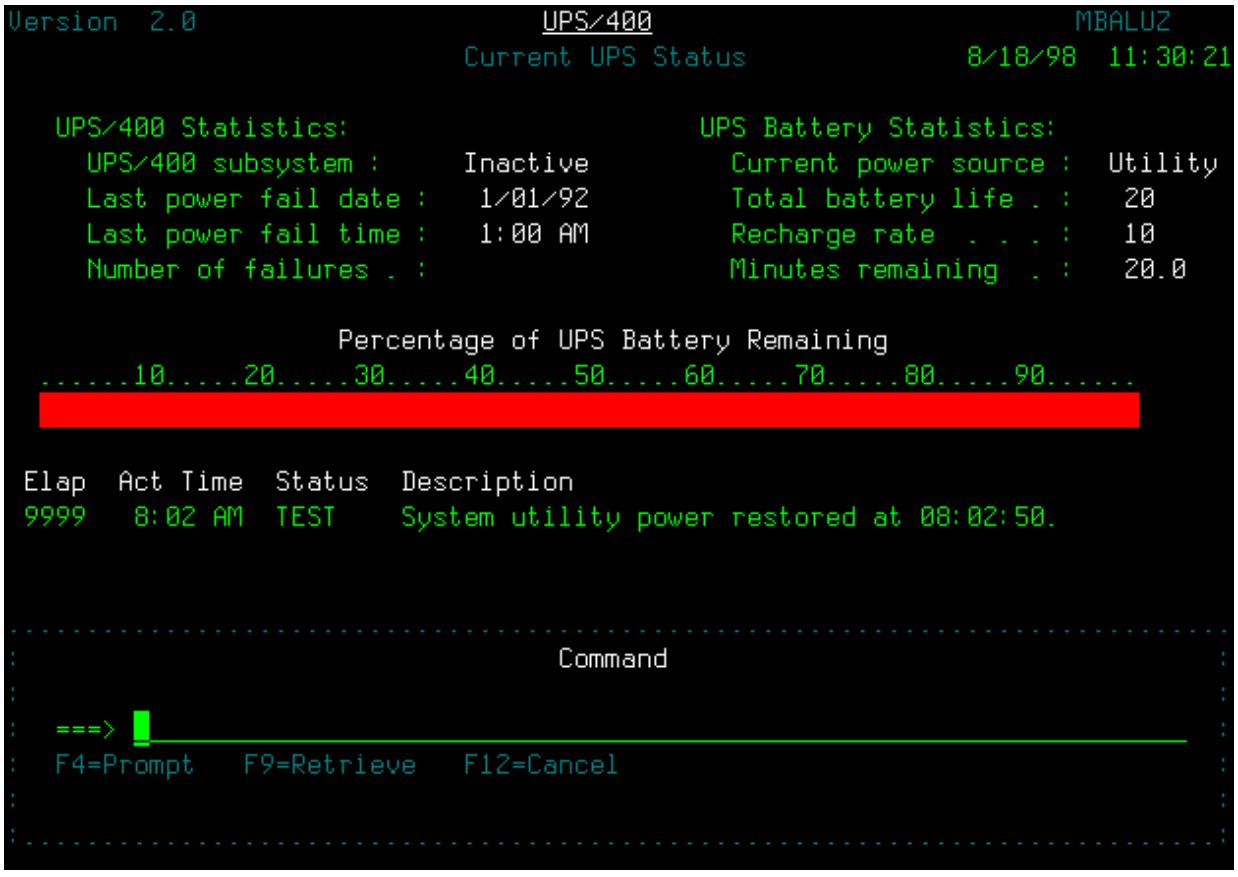
- **Recharge rate**: Rate of recharge as defined in the System Setup screen. This value is expressed as the number of minutes recharging time required to yield one minute of usable UPS battery time
- **Minutes remaining**: Number of minutes remaining that the UPS can sustain the system during a power outage. This value will equal total battery life (above) when the UPS batteries are fully charged

PERCENTAGE OF UPS BATTERY LIFE REMAINING: This value is graphically indicated as a horizontal number-line bar and represents the percentage of actual UPS battery time remaining in relation to the total UPS battery life.

The following is a description of logged **UPS/400** activity:

- **Elap**: Elapsed number of minutes since FIRST power outage (i.e., since UPS was fully charged.)
- **Act Time**: Actual time of event
- **Status**: Status of event. TEST indicates event occurred during **UPS/400** Test mode. ACTIVE indicates event has completed. Note that ACTIVE and DONE will not be reported in Test mode
- **Description**: Textual description of occurrence. An asterisk (*) indicates a group process that occurred as a scheduled event in the **UPS/400** System Attributes screen

NOTE: You can now access a command line window from the current UPS Status Screen by pressing the F9 key and then Option 7. This will provide you with greater mobility within the system.



SYSTEM SETUP

UPS/400
MBALUZ
System Setup
Type choices, press Enter.
UPS battery specifications:
Battery life . . . . . 20 Minutes
Recharge rate . . . . . 10 Minutes
Alternative subsystem specifications:
Subsystem description . . . . > Name
Library . . . . . Name
Work station name 1 . . . . . Name, generic*
Work station name 2 . . . . . Name, generic*
Work station name 3 . . . . . Name, generic*
Work station name 4 . . . . . Name, generic*
Work station name 5 . . . . . Name, generic*
F3=Exit F12=Cancel

This menu allows setting of values that are global in nature to the operations of **UPS/400**. This includes information specific to your type of UPS, as well as requirements for system power down. For this section, you will need to acquire some of this information from you UPS documentation or your supplier.

UPS BATTERY SPECIFICATIONS:

- **Battery life**: The number of minutes your UPS can sustain your system in the event of a power outage
- **Recharge rate**: The number of minutes recharging time required to yield one minute of usable UPS battery time

ALTERNATIVE SUBSYSTEM SPECIFICATIONS:

- **Subsystem description**: Valid AS/400 object name you wish to assign to alternative subsystems
- **Library**: Library name where **UPS/400** will create the alternate subsystem description
- **Work stations 1 – 5**: Work station name entries assigned to alternate subsystems

Note: This portion of the System Setup (Alternative Subsystem Specifications) is optional. The alternate subsystem defined here will be automatically started immediately after all other interactive subsystems are ended in the power down process (i.e., *INT step you scheduled in the System Attributes menu). The library names above should already exit, but the subsystem description will be created by **UPS/400**.

To Make UPS/400 Permanent

To make **UPS/400** permanent, the user should complete and return the AS/Manager License agreement to PBS. Based on your CPU serial number(s), PBS product support will issue a permanent security number(s). To install this permanent security number, please do the following:

1. Start **UPS/400** by keying in STRUPS400 and press Enter.
2. Key in UPDUPSSYSV on the command line and press Enter.
3. Input the 7 digit permanent security number supplied by PBS product support in the entry field and press Enter. The user will get a message indicating that the product has been made permanent.

If questions arise during this process, call PBS product support at (918) 587-1500.

PRODUCT WARRANTY AND SUPPORT

This section contains important warranty and product support information. Please read it carefully.

PRODUCT SUPPORT:

UPS/400 has been thoroughly tested and comes with online help text as well as user documentation. Displays are simple to understand and use. However, if you have any problems using **UPS/400**, we recommend the following steps:

1. Review the documentation and help text provided by **UPS/400**, which contains answers to a majority of questions that might arise.
2. Have job logs, error messages (first and second levels), screen prints, etc. available to discuss with an PBS technical support representative
3. Call an PBS product support representative at the number show at the front of this manual.

PHONE SUPPORT:

Call PBS technical support between the hours of 7:30 a.m. and 5:30 p.m. CST five days a week for questions or problems you may be having. We will be happy to answer them. If the problem is of a critical nature, our 24-hour answering service can reach us at all hours.

Please have ready any material pertaining to your questions (job logs/printouts to refer to, displays, etc.). This makes it easier for our product support analyst to understand the problem and assist you promptly.

PRODUCT WARRANTY AND MAINTENANCE:

PBS warrants that **UPS/400** software will be free of defects for 90-days after software installation. Product technical phone support and replacement materials will be provided during this period at no charge.

Annual maintenance agreements may be purchased at published rates by licensed users for ongoing **UPS/400** support after the initial 90-day free warranty period. Payment of this fee entitles you to continuing technical support, product enhancements, problem corrections, OS/400 release compatibility, and new releases of **UPS/400**.

REMOTE CUSTOMER SUPPORT

Automated Customer Support (ACS) is designed to permit remote user access to the PBS customer support AS/400. This product is offered at no charge to customers who are under a software maintenance license agreement. It provides menu screens to assist you in defining ACS connectivity to the PBS customer support machine and in ordering any necessary enhancements or corrections (PTFs) to PBS software products.

ACS allows you to:

- Order PTFs for any AS/Manager product
- Send a message to technical support
- Page a technical support representative for emergencies
- Ask questions or search for answers on Q&A database.

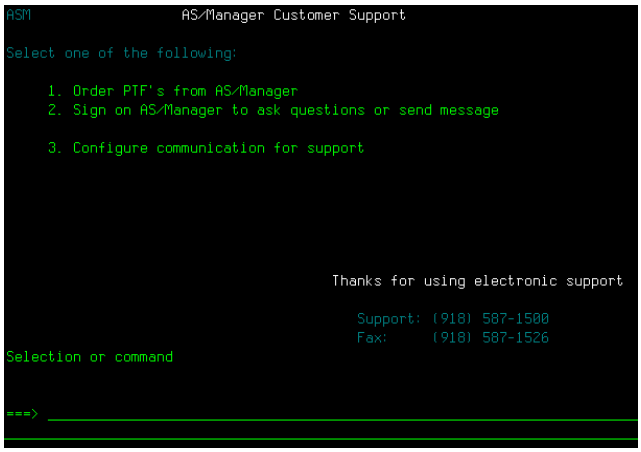
Automated Customer Support is provided as a service to our valued customers in order to assure the highest level of support. If you are interested in purchasing the product for your own PTF distribution requirements, call us and we will provide additional information.

INSTALL/REINSTALL PROCEDURE:

The following instructions will give you an overview of how to load ACS and order a PTF. Be sure that the user installing ACS has *ALLOBJ authority before entering the following commands.

1. Install ACS:
   - Enter the command: ***RSTLIB LIB(ACSLIBC) DEV(xxxxx)***
   - Enter the command: ***ADDLIBLE ACSLIBC***
   - Enter the command: ***GO ASM***

   This will take you to the main menu for Automated Customer Support.


ASM
AS/Manager Customer Support
Select one of the following:
1. Order PTF's from AS/Manager
2. Sign on AS/Manager to ask questions or send message
3. Configure communication for support
Thanks for using electronic support
Support: (918) 587-1500
Fax: (918) 587-1526
Selection or command
===>

2. Check the resource name:
   - Enter the command: ***DSPLIND QESLINE***
   - Look at the IBM line and check the value “Resource Name.” It will normally be LIN011.

3. Configure the line:
   - Use option 2 (Configure Communication for Support) on the ACS menu. To access the online user documentation, take Option 3 for the Configuration Menu, then press F23 to view it or F24 to print it. Option 3 should be executed before any PTFs are ordered. It will create a line (ASM$LINE), a controller (ASM$CTL) and a device (ASM$DEV). The user should not vary these objects on. The order process will vary them on during the

procedure – and off at the end. You must insure that there are no other lines varied onto the resource that you name for this line. In most cases the screen can be used with the provided defaults.

- Enter the resource name if different from LIN011. The line speed should be left at 2400 and the phone number should be correct unless you do not have a direct line and need something like "9:" to precede the number in order to get an outside line. Press enter and a line (ASM$LINE), a controller (ASM$CTL) and a device (ASM$DEV) will be created.

4. Check for another line varied on:
   - Use the WRKCFGSTS *LIN ASM$LINE command to look at the status of the ACS line. Enter a 1 beside it to vary it on. The line should then show connect pending. Now enter a 2 beside it to vary it off. If you get a failure on the vary on, then there is another line currently varied on to the resource. Enter the command WRKHDWRSC TYPE (*CMN) to look at all lines that share this resource. Then use WRKCFGSTS command to vary the line off.

5. Order or view PTFs:
   - Use option 1 (Order PTFs from AS/Manager) on the ACS menu to order the PTF. Simply enter the PTF ID supplied by AS/Manager. The PTF will be transferred to you machine and will be accompanied by a report highlighting the PTF and giving instruction on how to load it.
     PTF ID: Provided to you by AS/Manager technical support
     CUSTOMER INFORMATION: Enter you company name, contact name, and telephone number.
   - A message will be displayed at the bottom of the screen giving the status of the transfer operation. To view a summary of all available PTFs, enter ASMSUMMARY in the PTF ID.

NOTE: If the keyword *PASSTHRU is keyed into the PTF ID field, AS/Manager technical support will be able to sign onto your AS/400 to provide online support. **Please contact PBS technical support before entering *PASSTHRU into the PTF ID field.**

If you have any questions or problems with the above procedure, contact PBS. technical support at (918) 587-1500.